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USABILITY AND UTILITY TESTING OF THE SOLDIER'S DAY PROGRAM

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Heather J. Woods

JUNE 2002

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USABILITY AND UTILITY TESTING OF THE SOLDIER'S DAY PROGRAM

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Abstract

Soldier's Day (SD) provides a compendium of dismounted soldier's information including descriptions of clothing and equipment, roles and tasks performed, organizational structure, soldier characteristics, and human factors guidelines and references. The aim of this trial was to investigate the usability and utility of the SD Multimedia database with representative stakeholders. Twenty-five users from the six stakeholder groups (Requirements Staff, Researchers, Engineering Staff, Designers and Manufacturers, Academia and Other Army Units) completed the assessment of SD. For the purposes of this trial, a number of modifications were made to include the development and addition of a Battle Dress model, mission operation scenarios and task flows, and updated reference materials and manuals. Both a group session and mail-outs were used to administer the usability / utility evaluations. There was good support for the usefulness of SD as a tool to support planning and analysis in a range of different occupations and areas of interest. The rating of utility was reasonably high suggesting that SD provided participants with many of the things they needed to support their tasks and that these things were useful. Participants found the software to be user friendly with a few exceptions related to the more complex forms of navigation in the system. Features such as the Load List, the Notepad, Human Factors Basics and the History feature were not very highly rated, but a majority of users agreed that the features were user-friendly. Recommendations to improve the usability are detailed in the report. Future development opportunities are also detailed in the report.

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Résumé

La base de données de la journée du soldat (JS) constitue un recueil de renseignements sur les soldats débarqués. L'on y trouve des informations sur leurs vêtements et leur équipement, sur les rôles et les tâches qu'ils exécutent, sur leur structure organisationnelle et sur les caractéristiques du soldat ainsi que des directives et des références concernant les facteurs humains. Cet essai a pour objet d'évaluer, en collaboration avec des représentants des intervenants, la convivialité et l'utilité de la base de données multimédia de la JS. Vingt-cinq utilisateurs venant des six groupes d'intervenants (le personnel des besoins, les chercheurs, le personnel du génie, les concepteurs et les fabricants, le monde universitaire et autres unités de l'Armée de terre) ont évalué la base JS. Pour les fins du présent essai, un certain nombre de modifications ont été apportées de façon à inclure l'élaboration et l'ajout d'un modèle de tenue de combat, de scénarios concernant le déroulement de missions, de diagrammes des tâches ainsi que des documents et manuels de référence mis à jour. Les évaluations de la convivialité/l'utilité ont été administrées dans le cadre de séances de groupe et également à l'aide d'envois postaux. L'utilité de la JS en tant qu'outil servant à appuyer la planification et l'analyse dans toutes sortes d'occupations et de zones d'intérêt a bénéficié d'un bon appui. Les résultats de l'évaluation de l'utilité étaient raisonnablement bons, ce qui laisse supposer que la JS a offert aux participants de nombreux outils dont ils avaient besoin pour exécuter leurs tâches et que ces outils étaient utiles. Les participants ont trouvé le logiciel convivial à part quelques exceptions qui se rapportent à des procédures de navigation plus complexes. Des fonctions comme Charger les listes, Notepad, Principes des facteurs humains et Historique n'ont pas obtenu de bonnes notes, mais la plupart des utilisateurs ont convenu qu'elles étaient conviviales. Des recommandations voulant qu'on améliore la convivialité sont décrites en détail dans le présent rapport. Y figurent également des possibilités d'élaboration futures.

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Executive Summary

The following report documents the method and results of the usability / utility evaluation of the Soldier's Day Multimedia Database Software. Soldier's Day (SD) provides a compendium of dismounted soldier's information including descriptions of clothing and equipment, roles and tasks performed, organizational structure, soldier characteristics, and human factors guidelines and references. The aim of this trial was to investigate the usability and utility of the SD Multimedia database with representative stakeholders. Stakeholders include both military and civilian personnel involved in the development, acquisition and life cycle management process. Twenty-five users from the six stakeholder groups (Requirements Staff, Researchers, Engineering Staff, Designers and Manufacturers, Academia and Other Army Units) completed the assessment of SD. For the purposes of this trial, a number of modifications were made to include the development and addition of a Battle Dress model, mission operation scenarios and task flows, and updated reference materials and manuals.

Both a group session and mail-outs were used to administer the usability / utility evaluations. In the group sessions, participants were given an orientation and asked to complete several tasks. Tasks were selected to familiarize the user with the various types of content, while using various types of program features. Tasks included:

- Navigational Tasks;
- Obtain various types of information on Clothing and Equipment;
- Obtain various types of information on Organizational Structure;
- Obtain various types of information on Missions and Tasks;
- Use Load List;
- View Mission Scenarios and Tasks Flows;
- Use the Reference Function;
- Obtain information regarding Human Factor Basics; and
- General Functionality (e.g. Notebook, Keyword Search, Cut and Paste, Print, etc.)

Following each task, the participants were required to answer utility and usability questionnaires. Data collection for the group sessions included direct observation, questionnaire completion, and focus groups. Video of two participants in each group was also collected for possible future analyses.

Data collection for the mail-outs consisted of questionnaire completion. Participants were given a letter of introduction and a mail-out package (Orientation Letter, DCIEM Fact Sheet, SD CD and User Manual). Participants were instructed to mail the completed questionnaire within 3 weeks.

There was good support for the usefulness of SD as a tool to support planning and analysis in a range of different occupations and areas of interest. The rating of utility was reasonably high suggesting that SD provided participants with many of the things they needed to support their tasks and that these things were useful. Many stakeholders commented that SD was useful as a basic introduction for people who know very little about the military, but could provide additional detail for those already knowledgeable in the field.

Participants found the software to be user friendly with a few exceptions related to the more complex forms of navigation in the system. Lower acceptance of the navigational interface were not surprising since SD was designed and built before the Internet became popular and accepted as the defacto style for navigation. Features such as the Load List, the Notepad, Human Factors Basics and the History feature were not very highly rated, but a majority of users agreed that the features were user-friendly. Recommendations to improve the usability are detailed in the report.

Overall, the results of the Usability and Utility testing of the SD program verified the intended usefulness of the database, and the user-friendly interface design. Based on the results of the study, future considerations include;

- Revise software to improve usability;
- Transform database to a web-browser platform;
- Integrate Mechanized Operations;
- Expand scope to include additional army branches;
- Imbed human factors tools into SD platform;
- Modify SD to Support Training; and
- Establish ownership and management of SD.

Résumé

Le présent rapport fait état des techniques et des résultats de l'évaluation de la convivialité/l'utilité de la base de données multimédia de la journée du soldat. La base de données de la journée du soldat (JS) constitue un recueil de renseignements sur les soldats débarqués. L'on y trouve des informations sur leurs vêtements et leur équipement, sur les rôles et tâches qu'ils exécutent, sur leur structure organisationnelle, sur les caractéristiques du soldat ainsi que des directives et des références concernant les facteurs humains. Cet essai a pour objet d'évaluer, en collaboration avec des représentants des intervenants, la convivialité et l'utilité de la base de données multimédia de la JS. Les intervenants comprennent des militaires et des civils qui participent au processus d'élaboration, d'acquisition et de gestion du cycle de vie du matériel. Vingt-cinq utilisateurs venant des six groupes d'intervenants (le personnel des besoins, les chercheurs, le personnel du génie, les concepteurs et les fabricants, le monde universitaire et autres unités de l'Armée de terre) ont évalué la base JS. Pour les fins du présent essai, un certain nombre de modifications ont été apportées de façon à inclure l'élaboration et l'ajout d'un modèle de tenue de combat, de scénarios concernant le déroulement de missions, de diagrammes des tâches ainsi que des documents et manuels de référence mis à jour.

Les évaluations de la convivialité/l'utilité ont été administrées dans le cadre de séances de groupe et également à l'aide d'envois postaux. Dans les séances de groupe, on a fourni des directives aux participants et on leur a demandé d'exécuter plusieurs tâches. Ces dernières ont été sélectionnées dans le but de familiariser les utilisateurs avec le contenu en lui permettant d'utiliser les diverses fonctions du programme. Les tâches comprennent :

- exécuter des tâches de navigation;
- obtenir diverses informations sur les vêtements et l'équipement;
- obtenir diverses informations sur la structure organisationnelle;
- obtenir diverses informations sur les missions et les tâches;
- se servir de la fonction Charger les listes;
- visionner les scénarios de mission et les diagrammes des tâches;
- se servir de la fonction Référence;
- obtenir des informations sur les Principes des facteurs humains;
- se servir de fonctions générales (p. ex., Notebook, Recherche par mot clé, Couper/coller, Imprimer, etc.).

Après chaque tâche, les participants étaient tenus de répondre à des questions sur la convivialité et l'utilité. Dans les séances de groupe, les données ont été recueillies par le biais d'observations directes, d'un questionnaire et de groupes de discussion. Des films vidéo de deux participants de chaque groupe ont également été rassemblés pour effectuer d'éventuelles analyses à l'avenir.

Les données recueillies dans les envois postaux provenaient d'un questionnaire. Les participants ont reçu, par la poste, une lettre d'introduction et une trousse (une lettre d'orientation, une fiche de renseignements de l'IMED, le CD-ROM JS et un manuel de l'utilisateur). On leur a demandé de renvoyer par la poste le questionnaire dûment rempli dans les trois semaines qui suivent la date de réception.

L'utilité de la JS en tant qu'outil servant à appuyer la planification et l'analyse dans toutes sortes d'occupations et de zones d'intérêt a bénéficié d'un bon appui. Les résultats de l'évaluation de l'utilité étaient raisonnablement bons, ce qui laisse supposer que la JS a offert aux participants de nombreux outils dont ils avaient besoin pour exécuter leurs tâches et que ces outils étaient utiles. Beaucoup d'intervenants ont trouvé la JS très efficace, car elle fournit une introduction simple aux personnes qui connaissent très peu l'organisation militaire et des détails supplémentaires à ceux qui sont au courant du domaine.

Les participants ont trouvé le logiciel convivial à part quelques exceptions qui se rapportent à des procédures de navigation plus complexes. Le peu d'enthousiasme suscité par l'interface de navigation n'est pas surprenant puisque la JS a été conçue et mise au point avant que l'Internet ne devienne populaire et qu'elle a été approuvée comme étant un mode de navigation de fait. Des fonctions comme Charger les listes, Notepad, Principes des facteurs humains et Historique n'ont pas obtenu de bonnes notes, mais la plupart des utilisateurs ont convenu qu'elles étaient conviviales. Des recommandations voulant qu'on améliore la convivialité sont décrites en détail dans le présent rapport.

En général, les résultats des essais portant sur la convivialité et l'utilité du programme JS ont confirmé l'efficacité visée de la base de données et la convivialité de l'interface. Suite aux résultats de l'étude, on a décidé de prendre les mesures suivantes à l'avenir :

- Examiner le logiciel pour améliorer sa convivialité
- Rendre la base de données compatible avec un navigateur Web
- Intégrer la fonction Opérations mécanisées
- Élargir la portée de la base de donnée de façon à ajouter d'autres branches de l'Armée de terre
- Intégrer des outils de facteurs humains à la plate-forme de la JS
- Modifier la JS en y ajoutant la fonction Formation de soutien
- Identifier les propriétaires et les responsables de la gestion de la JS

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1.0 Introduction

1.1 Background

The following report documents the method and results of the usability / utility evaluation of the Soldier's Day Multimedia Database Software. The trial was conducted by Human*systems* Incorporated (HSI®) under contract to the Defense and Defence and Research Development Canada (DRDC).

The Soldier's Day Multimedia database has been developed by the Operational Human Engineering group at Defence Research and Development Canada [DRDC] Toronto (formerly Defence and Civil Institute of Environmental Medicine [DCIEM]). The Soldier's Day Database provides a compendium of dismounted soldier's information including descriptions of clothing and equipment, roles and tasks performed, organizational structure, soldier characteristics, and human factors guidelines and references.

The Soldier's Day database was developed to assist in defining and illustrating appropriate user requirements and the associated material and technical specifications. This will result in more valid and verifiable design criteria to better guide off-the-shelf purchases, engineering developments, and human factors evaluations.

A series of task exercises have been developed to allow users representing various stakeholders to evaluate the usability and utility of the Soldier's Day program. These exercises include elements that address each of the areas of utility to be tested.

1.2 Aim

The aim of this trial was to investigate the usability and utility of the Soldier's Day Multimedia database with representative stakeholders. Stakeholders include both military and civilian personnel involved in the development, acquisition and life cycle management process.

1.3 Objectives

The primary objectives of this trial were to:

- Provide user feedback on the usefulness of the features in Soldier's Day as they apply to various stakeholders.
- Evaluate the ease-of-use of Soldier's Day.

1.4 Software Modifications

For the purposes of this trial, a number of software modifications were made to the Soldier's Day program. Modifications included the development and addition of a Battle Dress model to allow users to add or delete items from a load list. In addition, mission operation scenarios were added along with their associated task flows. Reference material and manuals were also updated to reflect these software modifications.

1.5 Limitations

The small number of trial participants from each category of representative stakeholders allowed for descriptive statistical analysis of results only, precluding any meaningful inferential statistical analysis. Further, the trial sample comprised a cross section of stakeholders who each had potentially different needs of the software. The aggregation of data under these circumstances needed to be done with care to ensure that different perspectives on utility were not misrepresented.

Due to time restrictions, not all of the features included in Soldier's Day may have been performed by the users during testing. For this reason, participants were asked to evaluate concepts they may not have had an opportunity to trial in great detail.

2.0 Method

2.1 Outline

In this trial, the following key usability features of Soldier's Day version 2.0 were evaluated.

- Ease of Navigation
- Human Factors Basics Ease of Use
- References Ease of Use
- Load List Ease of Use
- Mission Scenario Ease of Use
- Task Flows Ease of Use
- Notebook Ease of Use
- Keyword Search Ease of Use
- Ease of Documentation Generation
- Ease of Printing

The main areas of utility tested in this trial included:

- Support the development and acquisition process.
- Support the development of Statements of Requirements
- Support the development of technical specifications
- Assist in the planning of research protocols
- Assist in the prioritization of research efforts
- Develop understanding of missions, tasks and activities
- Develop understanding of physical and informational demands
- Develop understanding of user characteristics
- Develop understanding of current clothing and equipment systems
- Develop and understanding of clothing and equipment compatibility issues.
- Provide Human Factors guidelines
- Provide Human Factors related references
- Provide a Battle Dress model including weights of items.

Both group session and mail-outs were used to administer the usability / utility evaluations. Each participant received a package with a Soldier's Day (Version 2.0) CD, DCIEM fact sheet, user manual, and evaluation materials. Evaluation materials consisted of an orientation letter, task exercises and questionnaires. Two half-day group sessions were conducted, each including a focus group. A three-week trial period was allotted for the mail-out participants.

Participants included representation from requirements staff, researchers, engineering staff, designers and manufacturers, academia, test and evaluation staff, and other army units. A group session was conducted with representatives from the requirements staff and the engineering staff.

2.2 Participants

2.2.1 Identification and Justification

Trial participants were selected to represent a cross section of the potential user population. Participants included stakeholders with representation from all areas of the Soldier System requirements definition, development, acquisition and life cycle management process, both within and outside of DND.

Table 1 below indicates the mail-out and group session participants and their classifications. Prior to actual trial evaluation, the exercises and questionnaires were piloted internally at HSI® with staff unfamiliar with the Soldier's Day database.

Stakeholder Classification	Mail-Out Participants	Number of Respondents	Group Session Participants
REQ Requirements Staff	11 OFFICERS (DLR) 1 NCO (DLR)	7	7
RES Researchers	10 DCIEM 2 DREV 1 DRES 1 CRAD	2 DCIEM 2 DREV 1 DRES	0
ENG Engineering Staff	8 DSSPM	4	4
DES Designers and Manufacturers	10	3	0
ACA Academia	6	3	0
ARMY Other Army Stakeholders	1 RMC 1 Inf. School 1 T&E 1 DNBCD 1 DAT – CFB Kingston 1 Army Lessons Learned Centre 1 DAD	1 RMC 1 Inf. School 1 T&E	0

Table 1: Stakeholder Classification and Participants

Table 2 indicates the relevant areas of Soldier's Day utility for the various stakeholders. Efforts were made to ensure that each classification of stakeholders provided feedback regarding their relevant areas of utility.

Stakeholders ⇒ / Areas of Utility	Requirements Staff	Researchers	Academia	Engineering Staff	Designers / Manufacturers	Army Stakeholders
Provide baseline info to support development & acquisition process	✘	✘	✘	✘	✘	✘
Develop statements of operational requirements (SOR)	✘	✘				
Develop technical specifications		✘		✘		
Plan research protocols	✘	✘	✘			
Prioritize research efforts	✘	✘	✘			
Understand task demands (and flows)	✘	✘	✘	✘	✘	✘
Understand physical demands	✘	✘	✘	✘	✘	✘
Understand information requirements	✘	✘	✘		✘	
Understand user characteristics	✘	✘	✘	✘	✘	✘
Understand clothing and equipment	✘	✘	✘	✘	✘	✘
Compatibility issues	✘	✘	✘	✘	✘	✘
Supply basic HF guidelines	✘	✘	✘	✘	✘	✘
Load List (Battle Dress Model)	✘	✘		✘	✘	✘
Military references	✘	✘	✘	✘	✘	
Scientific references	✘	✘	✘	✘	✘	

Table 2: Utility Requirements of Stakeholders

2.2.2 Orientation of Participants

Group session participants were given approximately 10 minutes of orientation with Soldier's Day software. Orientation comprised of an oral presentation of background information regarding the Soldier's Day project and the aim of the utility / usability trial.

Mail-out participants were mailed a CD-ROM of the Soldier's Day software along with a user manual and DCIEM fact sheet to assist them in familiarizing themselves with the Soldier's Day software. A letter of introduction was sent to each Mail-out participant to provide an orientation.

2.3 Task Exercises

After orientation, participants completed several exercises. These exercises included:

- Navigational Tasks
- Obtain various types of information on Clothing and Equipment
- Obtain various types of information on Organizational Structure
- Obtain various types of information on Missions and Tasks
- Use Load List
- View Mission Scenarios and Tasks Flows
- Use the Reference Function
- Obtain information regarding Human Factor Basics
- General Functionality (e.g. Notebook, Keyword Search, Cut and Paste, Print, etc.)

Each task required the user to provide ratings and comments on a User Evaluation Package (Annex A). After each task was completed, participants were asked to complete a final questionnaire with ratings and comments to evaluate selected aspects of the system based upon their overall impressions throughout the trial.

2.4 Data Collection

Data collection for the group sessions included direct observation, questionnaire completion, and focus groups. Video of two participants in each group was also collected for possible future analyses.

Data collection for the mail-outs consisted of questionnaire completion.

2.4.1 Questionnaires

Questionnaires were administered after completion of the familiarization exercises. A Utility Assessment Questionnaire (Annex B) focused on the utility of Soldier's Day features. A Usability Assessment Questionnaire (Annex C) focused on the ease of use of Soldier's Day features. Questions evaluated different aspects of the database. These included:

- Uses or needs this software could fulfill.
- The most and least useful aspects and additional requirements.
- The most and least easy-to-use features and additional requirements.
- Usability / Utility ratings.
- Usability / Utility comments.

The primary rating scale used in the questionnaire was a five-point interval scale for agreement/disagreement with a statement. An example scale is provided in Figure 1.

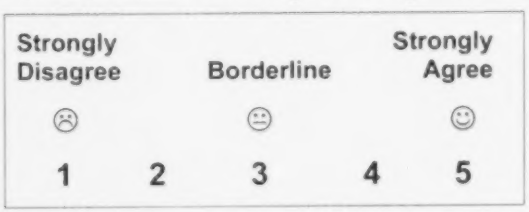

Figure 1: Agree/Disagree Rating Scale

An Additional Comments Questionnaire (Annex D) was issued to assess further comments related to the use of the program.

2.4.2 Direct Observation

In the group sessions, trial administrators observed participants as they completed the various scenarios. Participants' questions and comments were also noted. This information was used to add qualitative information to the questionnaire ratings. In addition, observations were used to direct questions during the focus groups.

2.4.3 Video Recordings

In addition to direct observations, video recordings were collected during group sessions. Two video cameras were set up behind two participants to capture the mouse pointer movements on the screen, comments made by the participants, instructions given by the test monitor, and all interactions between the test monitor, participant, and the program. The video recordings were collected as a record for future reference during analyses.

2.4.4 Focus Groups

Focus group de-briefings were conducted in the group sessions following completion of the questionnaires. Questions consisted of structured open-ended questions developed to reflect areas where participants appeared to have had significant difficulties. Participants were also encouraged to discuss any other suggestions for improving the system.

2.5 Group Sessions Schedule

Table 3 below briefly lists the schedule of events of the group sessions.

Group Sessions			
Duration	**Location**	**Participants**	**Details**
½ Day	Louis St-Laurent Building, Hull, PQ	Requirements Staff	3 hours duration.
½ Day	Louis St-Laurent Building, Hull, PQ	Engineering Staff	3 hour duration.

Table 3: Group Session Schedule

Each group session consisted of:

- 10 minutes Orientation including an introduction to Soldier's Day. Participants were introduced to the concept of Soldier's Day, the trial staff, and the objectives of the trial.
- Each participant was issued a CD and Soldier's Day User Manual.
- 90 minute Task Exercises. Each participant was given an exercise work sheet. The exercises required the user to install the software, navigate through the database and use various features to obtain information. Following each task, the participants were required to answer utility and usability questionnaires. Tasks were selected to familiarize the user with the various types of content, while using various types of program features.
- 40 minute Questionnaires. Questionnaires regarding overall usability and utility of the Soldier's Day program were administered to the participants for completion.
- 40 minute Focus Groups. A focus group debrief was conducted.

60 minutes was required at the start of each test day to ensure the facilities, computers, and equipment was set up. No participants were involved during the set-up.

2.6 Mail-out Sessions Schedule

Each mail-out session consisted of:

- Confirmation of User Participation
- Letter of Introduction and Mail-out package (Orientation Letter, DCIEM Fact Sheet, SD CD and User Manual).
- 3 week trial period.
- Participant to mail completed questionnaire back to HSI*.

2.7 Physical Layout and Equipment

The group session evaluations were conducted in a large conference room with enough seating/computer/facilitator space to accommodate approximately 8-10 people. The details of the equipment requirements are listed below:

- A large meeting or conference room,
- seating for at least 8 people for group discussions,
- overhead projector,
- at least 5 Soldier's Day computer work stations with desks and tables (note: one workstation was for administration i.e. HSI*),
- two video cameras and tripods.

The Mail-out evaluations only required that the participants computer systems meet the minimum computer requirements to install and operate the software.

2.8 Controls

General principles of controlled data collection were applied insofar as possible including:

- Trial administrators did not change during the trial.
- Physical Layout and equipment was kept constant.
- Orientation materials provided by trial personnel were scripted to ensure that participants received the same information.
- Exercises were kept constant for systematic exposure and training.
- Only trial administrators were present for the conduct of the trial.

3.0 Results and Discussion

3.1 Outline

This discussion presents the rating and comment data results for the following sections:

- Participant Information
- User Evaluation Tasks
- Utility Assessment
- Usability Assessment

Twenty-five users from the six stakeholder groups (Requirements Staff, Researchers, Engineering Staff, Designers and Manufacturers, Academia and Other Army Units) completed the assessment of Soldier's Day. As part of the assessment, they answered five-point Likert scale questions. For these questions, participants were asked to rate statements on a scale from 1 to 5 where one indicates "strongly disagree" and 5 indicates "strongly agree".

Participants were also asked to provide comments throughout the User Evaluation Tasks section. Furthermore, in the Utility Assessment and Usability Assessment section, they were asked to respond to open-ended questions about Soldier's Day.

Overall, task ratings were positive, but some specific concerns were repeated by several stakeholders in their comments. These have been identified in the following discussion.

3.2 Participant Information

The stakeholders were asked to describe their experience with Soldier's Day prior to the trial. Of the 25 stakeholders, 11 had no prior experience with Soldier's Day while 7 had viewed a demonstration and 6 had used the program before. One stakeholder did not answer this question. See Figure 2.

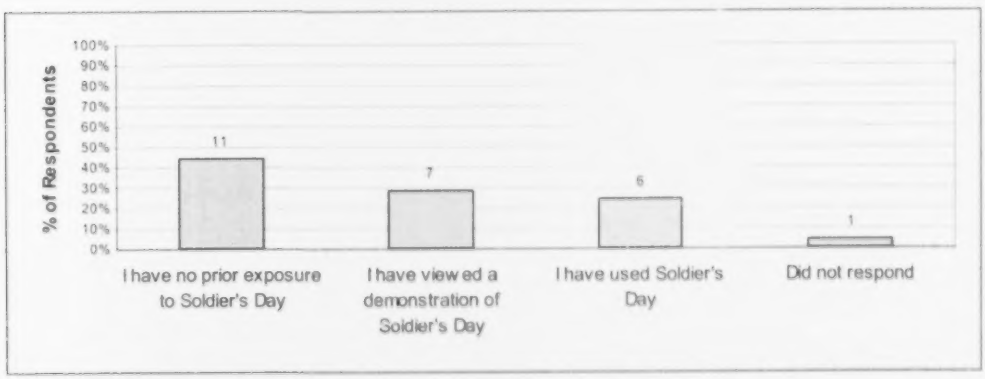

Figure 2: Previous Exposure to Soldiers Day

Participants were asked to indicate how often they typically used certain computer systems and applications. Two stakeholders did not respond to the computer experience questions. Of the stakeholders who answered these questions, all reported that they frequently used desktop PCs and word processor programs. Fewer respondents reported frequent use of WWW Browsers and spreadsheet programs and only two respondents frequently used Mac/Apple products. In addition to the two stakeholders who did not respond to any of the computer experience questions, 3 more stakeholders did not answer the Mac/Apple question. The responses to the computer experience questions are summarized in Figure 3.

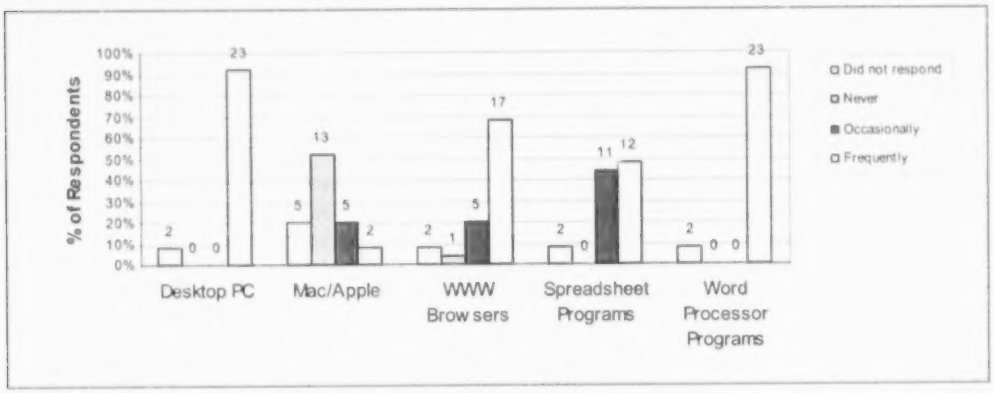

Figure 3: Computer Experience:
Indicate how often you typically use the following systems

3.3 User Evaluation Tasks

In this section of the trial, stakeholders were given a series of 14 tasks to complete using the Soldier's Day software. When they had completed each task, they were asked to rate statements about the task on a five-point Likert scale from strongly disagree to strongly agree. Their responses were converted to numerical format with 1 indicating "strongly disagree" and 5 indicating "strongly agree", so that the mean response for each statement could be calculated. Stakeholders were also asked to comment on any difficulties they encountered in each of the tasks. The results from each task are detailed below.

3.3.1 User Evaluation Task 1: Installation

In this task, stakeholders were instructed to install Soldier's Day on their computers. The majority of stakeholders rated "I found it easy to install Soldier's Day" as "4" or "5" on the Likert scale, with a mean of 4.1, indicating most people agreed or strongly agreed with this statement. (See Figure 4.)

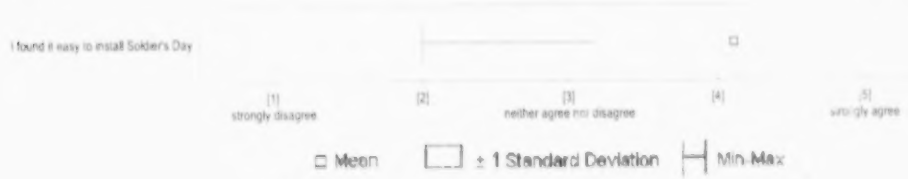

Figure 4: Installation Results

The comments regarding the installation of Soldier's Day indicate some areas of difficulty. Five users commented on problems associated with the installation of the video portion of the software. Three users pointed out the lack of instruction for users of Windows 98 or Windows NT; however, they were still able to install the software using the Windows 95 instructions provided. Three users also disliked the command-line style method for installing Soldier's Day from the CD. One user had to reboot a laptop computer in order to install the program successfully and another user experienced a system crash during installation because other programs were open during installation. Recommendations to address these issues are provided in Table 1 below.

Recommendations	
1a.	Write installation instructions for Windows 98/NT
1b.	Add warning to exit all other applications before setup begins
1c.	Add auto-run "pop-up" installation window when CD is first inserted into CD ROM drive

Table 4: Installation Recommendations

Subsequent programmer intervention was enacted to address problems associated with video installation and system crash.

3.3.2 User Evaluation Task 2: Startup

For this task, stakeholders were instructed to start the Soldier's Day program. Only one stakeholder commented that the start-up "requires training". All others comments stated that the program was easy to start. The majority rated it as "5" on the Likert scale, resulting in a mean response of 4.7. No recommendations for improvement are offered. (See Figure 5.)

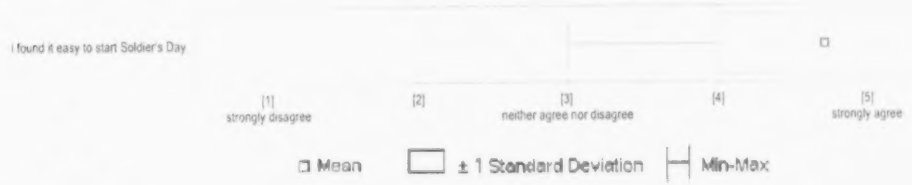

Figure 5: Start Up Results

Comments indicate that no significant difficulties were encountered with this aspect of the program.

3.3.3 User Evaluation Task 3: Online Help

In this task, trial participants were asked to find the contents of the online help and information to answer questions about the online help. Participants were asked to determine the contents of the online help, explain how to use the mouse buttons to get help on a specific feature and determine when the Soldier's Day database was last updated.

This area of the software was received favourably by the stakeholders, although with lower ratings on the Likert scale than for some of the other sections (see Figure 6).

The majority of stakeholders ranked "Overall I found the online help easy to use" and "Overall I found the online help useful" as "4" on the Likert scale, resulting in mean responses of 4.0 and 3.8, respectively.

When asked if the amount of graphics in the online help was appropriate, the majority assigned a value of "3" or "4", resulting in a mean response of 3.5. A similar rating pattern was seen for "I found the terminology of the online help to be clear and precise", resulting in a mean response of 3.7.

The ratings for "Information was easy to find" were distributed across all rating levels. Nine stakeholders rated it "3" or below, while 15 assigned values of "4" or "5". The overall mean for this category was 3.5. Two respondents commented that they could not run the online help properly, with only the "How to Use Help" file available. Three users commented that the interface was difficult to navigate at first and required practice to learn how to use. However, two users commented that the interface was similar to help files in other windows-based programs and thus felt familiar to them.

The ratings for "I would have organized the material differently" received a mean response of 2.7, with the greatest number of stakeholders responding "3" to this question (see Figure 7). Two users from the academic stakeholder category suggested a subcategory structure or treed organization to make the help file easier to navigate. This was one of only two "reverse scored" questions in the questionnaire (where a "disagree" response indicates satisfaction with the product). This could have made the question unclear, possibly causing some respondents to answer this question in a non-reverse manner (eg. assigning a score of 5 when they intended a score of 1).

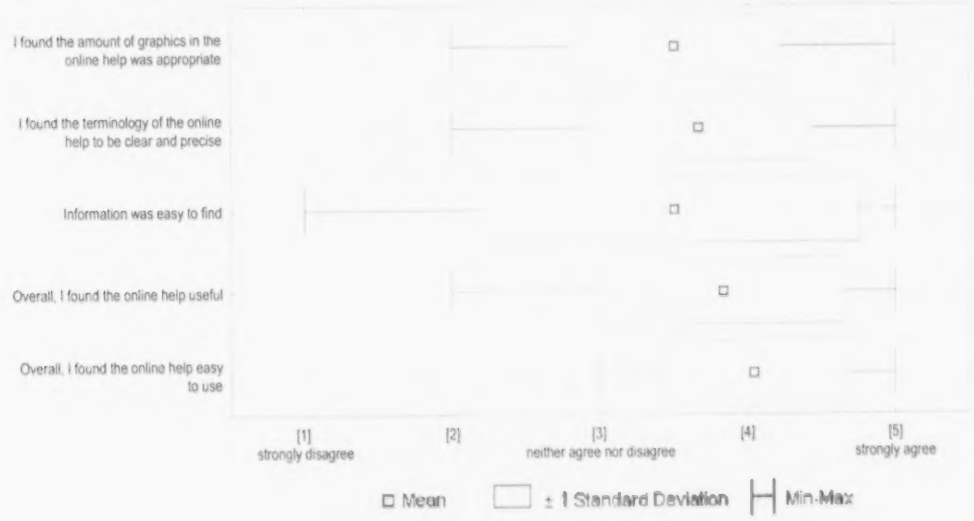
I found the amount of graphics in the online help was appropriate
I found the terminology of the online help to be clear and precise
Information was easy to find
Overall, I found the online help useful
Overall, I found the online help easy to use
[1] strongly disagree
[2]
[3] neither agree nor disagree
[4]
[5] strongly agree
Mean
± 1 Standard Deviation
Min-Max

Figure 6: Online Help Results

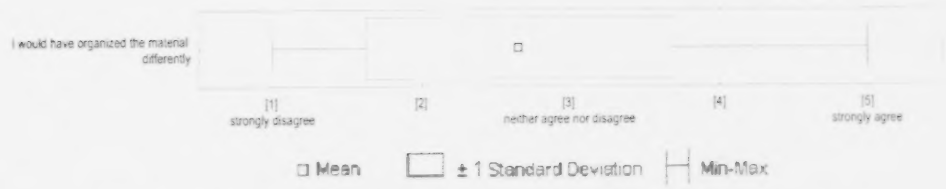

Figure 7: Online Help (Reverse Scored Item) Results

Recommendations to address these issues are provided in Table 5 below.

Recommendations	
3a.	Ensure help files work in Windows 98/NT applications
3b.	Rearrange help into subcategories to improve organization

Table 5: Online Help Recommendations

3.3.4 User Evaluation Task 4: Browsing: Clothing and Equipment

Stakeholders were instructed to browse through the Clothing and Equipment category and answer a series of questions. Required tasks included, among others, finding the "concept of use" for fragmentation vests and using the "Associated" button to find a reference document associated with the fragmentation vest.

This section was satisfactory to the majority of stakeholders, with only one or two individuals rating any one question less than "3" (see Figure 8). The highest rating was for the usefulness of the Clothing and Equipment information, with a mean response of 4.0. "Overall I found the clothing and equipment category easy to use" and "The amount of information for each item was sufficient for my needs" each received a mean response of 3.8.

The lowest rating in this section was for the comprehensiveness of the clothing and equipment items list, with a mean of 3.6. Written comments suggest this lower rating may have been due to some of the content being outdated, lacking some detail, or containing errors.

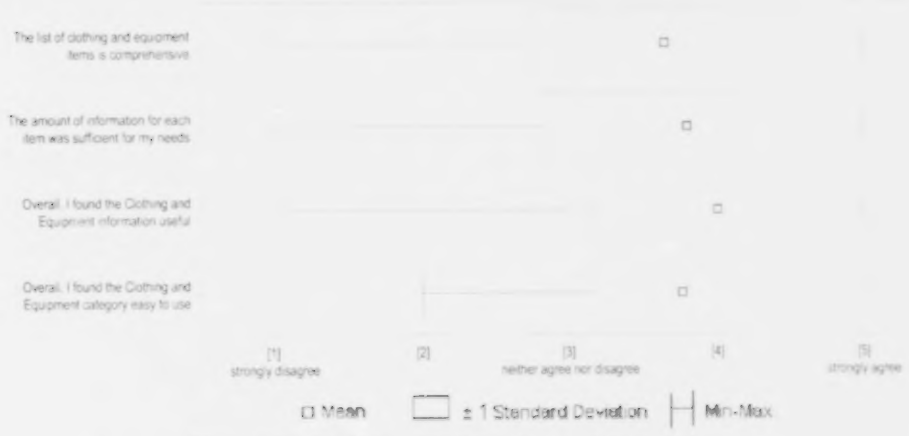
The list of clothing and equipment items is comprehensive
The amount of information for each item was sufficient for my needs
Overall, I found the Clothing and Equipment information useful
Overall, I found the Clothing and Equipment category easy to use
[1] strongly disagree
[2]
[3] neither agree nor disagree
[4]
[5] strongly agree
Mean
± 1 Standard Deviation
Min-Max

Figure 8: Clothing and Equipment Results

Comments received regarding the physical organization and navigation of this section suggest a "back" button would be helpful. As well, some of the information was not organized as the users expected. It was suggested in the comments that the sorting of items be done both alphabetically and categorically.

Recommendations to address these issues are provided in Table 6 below.

Recommendations	
4a.	Implement maintenance system for keeping data current, detailed and accurate
4b.	Add "back" button to improve ease of navigation
4c.	Present items both alphabetically and categorically
4d.	Minimize descriptor truncations in items and data window (or add left-to-right scroll bar)
4e.	Add a body armour category
4f.	Add ability to click on small index pictures to move to information related to the item

Table 6: Clothing and Equipment Recommendations

3.3.5 User Evaluation Task 5: Browsing: Soldiers and Organizational Structure

The stakeholders were instructed to browse through the Soldiers and Organizational Structure category and complete a series of tasks. They were asked to determine how many Light Automatic Riflemen are in a Rifle Section, the responsibilities of the Rifleman and what proportion of riflemen have a grade 11 education. They were also asked to use the "Associated" button to find a task associated with the Rifleman.

The highest rated area of the Soldiers and Organizational Structure results (see Figure 9) was the usefulness of the information, with a mean response of 4.0 on the five-point Likert scale. Only one stakeholder rated this less than "3". The responses regarding the sufficiency of the information about the dismounted rifleman and the infantry organizational structure had fairly high means, at 3.8 and 3.9, respectively.

Only one stakeholder rated the information about the dismounted rifleman less than "3", and no ratings lower than "3" were received for the infantry organizational structure.

The area rated the lowest for the Soldiers and Organizational Structure was the ease of use. The mean response was 3.4, with several stakeholders rating it less than "3", and the remaining clustering their ratings around "3" and "4". Ten stakeholders made comments on navigational difficulties. Two users commented that they resorted to using a keyword search rather than navigating through the interface, while another commented that using the tree function seemed faster. Six users had significant difficulty or were unable to complete tasks 5c and 5d. Task 5c instructed participants to look at the Demographics for Education Level and determine what proportion of riflemen have a grade 11 education. In task 5d, participants were to use the "Associated" buttons to find a task associated with the Rifleman (e.g. Bayonet Fighting). The problems users had in completing these tasks indicate some difficulties with the "Associated" feature.

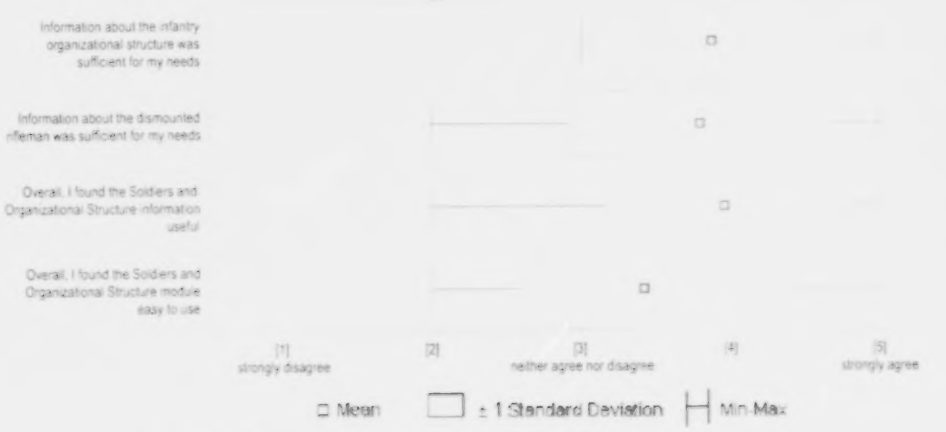
Information about the infantry organizational structure was sufficient for my needs
Information about the dismounted rifleman was sufficient for my needs
Overall, I found the Soldiers and Organizational Structure information useful
Overall, I found the Soldiers and Organizational Structure module easy to use
[1] strongly disagree
[2]
[3] neither agree nor disagree
[4]
[5] strongly agree
Mean
± 1 Standard Deviation
Min-Max

Figure 9: Soldiers and Organizational Structure Results

The Requirements Staff made comments on the methods for making an associated item the current item. Two commented that they didn't initially realize that you had to double click on the item, and one commented that he didn't immediately know to use the "Jump to" button.

Recommendations to address these issues are provided in Table 7 below.

Recommendations	
5a.	Fix "artic" spelling error (arctic)
5b.	Clarify methods of making an associated item the current item
5c.	Clarify meaning of "up and down" and "side-to-side" arrow icons (instruction or interface design)
5d.	Provide additional information comparing demographics to CF average
5e.	Provide additional information on cbt supp coy, specialty platoons, section vehicles, duties or secondary tasks of rifleman, etc.

Table 7: Browsing Soldiers and Organizational Structure Recommendations

3.3.6 User Evaluation Task 6: Browsing: Missions and Tasks

In this task, users were instructed to browse the Missions and Tasks category. While browsing this section, they were to complete seven tasks including, among others, viewing the "Section Attack" video, using the Tree View from the Main Menu, viewing a Mission Scenario and viewing a Task Flow.

This aspect of the Soldier's Day software was generally well received by all the stakeholders (see Figure 10). The sufficiency of the information in the Mission Scenarios received the highest Likert scale rating with a mean of 4.1. A mean response of 4.0 was received for the Missions and Tasks information being useful and comprehensive. As well as for the information for each item and in the Task Flows being sufficient. For all of these aforementioned areas, the majority of ratings given by individual stakeholders were clustered around "4", with few ratings below "3" for each of the areas.

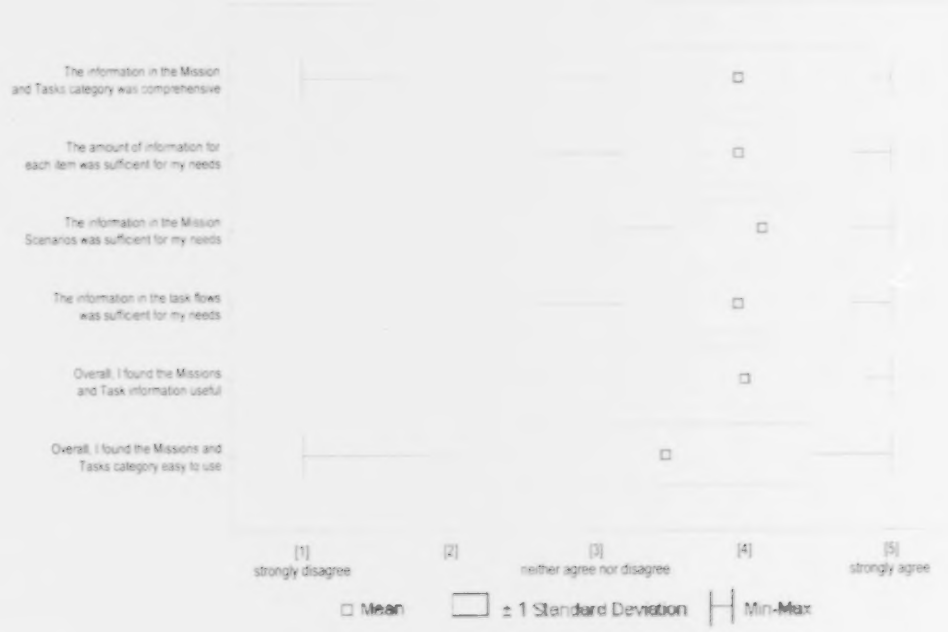
The information in the Mission and Tasks category was comprehensive
The amount of information for each item was sufficient for my needs
The information in the Mission Scenarios was sufficient for my needs
The information in the task flows was sufficient for my needs
Overall, I found the Missions and Task information useful
Overall, I found the Missions and Tasks category easy to use
[1] strongly disagree
[2]
[3] neither agree nor disagree
[4]
[5] strongly agree
Mean
± 1 Standard Deviation
Min-Max

Figure 10: Missions and Tasks Results

Ease of use received a lower rating, with a mean response of 3.5. The comments suggest several reasons for this lower rating. Five users reported crashes or program errors. Four comments suggested the PowerPoint slide presentations were difficult to navigate. Some stakeholders suggested that on-screen controls would help those unfamiliar with PowerPoint to navigate the slide presentation. There were also several comments on awkwardness, frustration or difficulty in performing the tasks. Two users also commented that the instructions given in the evaluation questionnaire were not clear. While this is not an issue with the Soldier's Day software, it could have caused difficulty in completing the assigned tasks and thus led to lower Likert scale ratings.

Recommendations to address these issues are provided in Table 8 below.

Recommendations	
6a.	Provide on-screen navigation features in PowerPoint slide presentation
6b.	Add program functionality to allow a double-click from tree view (instead of selecting and then clicking "go to")
6c.	Link "C7 rifle firing" under weapons as well as under tasks.
6d.	Add information on mechanized ops.

Table 8: Missions and Tasks Recommendations

3.3.7 User Evaluation Task 7: References

Users were instructed to use the Reference Search to identify and view references on two topics: helmet and night vision goggles. They were also instructed to print one of the references if they were connected to a printer.

The Reference Search section was well received by almost all of the stakeholders (see Figure 11). The majority agreed, many of them strongly, that this tool was useful, with a mean response of 4.2. The types of references were found to be useful and the search tool easy to use, with both categories yielding a mean response of 4.0. Two users commented that they expected to be able to double-click on a word in the keyword index, rather than having to select the word and then click "ok" to view the file. Three users commented that the "return" button did not function as expected. It returned to the main menu rather than to the previous page—thus accomplishing the same thing as the "main menu" button. Two users commented that the reference search is a good research tool.

Figure 11: References Results

Recommendations to address these issues are provided in Table 9 below.

Recommendations	
7a.	Add program functionality to allow a double-click on a word in the keyword index to go to a reference
7b.	Ensure return button returns to previous page, not main menu
7c.	Scroll keywords index window when scroll bar button is dragged up and down
7d.	Add reference numbers to all references
7e.	Enable selection of multiple references for printing
7f.	Enable print in landscape or portrait layout

Table 9: References Recommendations

3.3.8 User Evaluation Task 8: Human Factors Basics

Using the Human Factors Basics category, stakeholders were asked to define Human Factors. They were also asked to determine one of the basic models of Human Factors and what criteria a Human Factors Test Plan should meet.

The majority of users found this section easy to use, resulting in a mean of 4.0 for this category (see Figure 12). However, the mean values for the usefulness and comprehensiveness of this section were slightly low at 3.4. "The amount of information for each item was sufficient for my needs" received a mean score of 3.6 on the Likert scale. These findings are not altogether surprising, as several of the stakeholders have extensive knowledge in the area of human factors, and it would be difficult to incorporate that level of information into Soldier's Day. Two stakeholders also mentioned that they were unsure as to the value of including this section. In general, Researchers, who already have an extensive knowledge of human factors, commented that the information was too general for their needs. Other groups commented that they did not see why this section was included in Soldier's Day. A majority of participants, however, believed basic information regarding Human Factors would be beneficial to all stakeholders, especially those with less knowledge of its application.

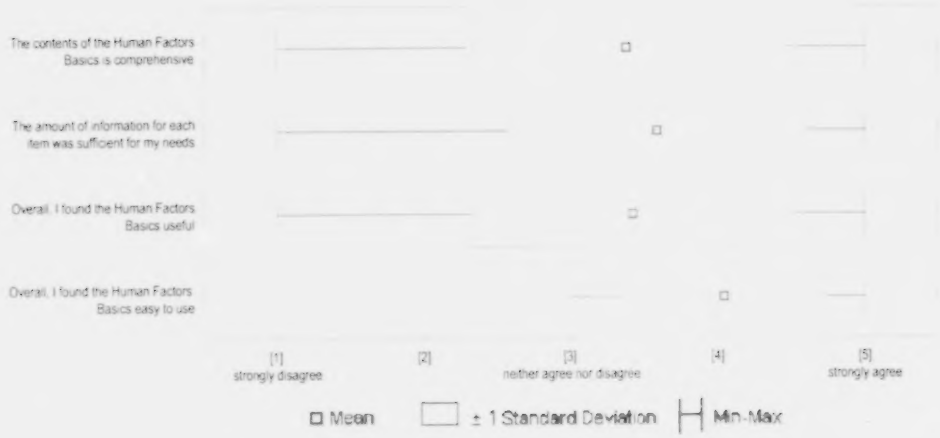
The contents of the Human Factors Basics is comprehensive
The amount of information for each item was sufficient for my needs
Overall, I found the Human Factors Basics useful
Overall, I found the Human Factors Basics easy to use
[1] strongly disagree
[2]
[3] neither agree nor disagree
[4]
[5] strongly agree
Mean
± 1 Standard Deviation
Min-Max

Figure 12: Human Factors Basics Results

Recommendations to address these issues are provided in Table 10 below.

Recommendation
8a. Ensure figures and graphics are not cropped

Table 10: Human Factors Basics Recommendations

3.3.9 User Evaluation Task 9: Keyword Search

Using the Keyword Search feature, stakeholders were asked to identify and view information anywhere in the database on three topics: Attack, Cold Weather and Gloves.

The Keyword Search aspect of the Soldier's Day software was generally well received (see Figure 13). The majority of Likert scale ratings for both ease of use and usefulness were "4" and "5", yielding respective means of 4.2 and 4.4. It was also mentioned that there appeared to be a discrepancy between the number of search results reportedly found, and the number of results actually displayed. There were some positive comments about the keyword search. One stakeholder suggested that the Keyword Search should appear with a specific button on every screen.

Figure 13: Keyword Search Results

Recommendations to address these issues are provided in Table 11 below.

Recommendations	
9a.	Ensure search results match count provided
9b.	Add functionality that highlights where keyword is found in text of returned search items

Table 11: Keyword Search Recommendations

3.3.10 User Evaluation Task 10: Load List

For this task, the stakeholders were first instructed to open the Load List from the Clothing and Equipment menu. They then generated a list of items that would be selected for a Rifleman in Fighting Order in a Temperate Climate. Using this list they were to determine how many HC Smoke Grenades are typically carried. Stakeholders were asked to select the target weight for a 50th percentile male and determine whether the actual weight of the load list exceeded the target weight for a 90th percentile male. Finally, they were instructed to start from an empty list and make a new load list, including standard items and a customized item. Users were told to save the list and then view and print a report of the list.

The usefulness of this section received ratings expressing either neutral or positive opinions from the stakeholders, yielding a mean of 4.1 (see Figure 14). Despite recognizing the usefulness of this tool, stakeholders found this feature difficult. "Overall I found the Load List easy to use" received a mean rating of 3.4. Five users reported problems in creating a customized load list. Four users commented that they received error messages leading to a program crash when they used the Load List option. In general, users stated that the interface was unclear and they had difficulty determining how to use it.

Figure 14: Load List Results

Recommendations to address these issues are provided in Table 12 below.

Recommendations	
10a.	Clarify procedure for customized load list (instruction or interface design). Suggested changes include "Tab" to move to next item and "Back Arrow" to remove item.
10b.	Add search or "type first letter" indexing feature to make it easier to find specific items in load list
10c.	Organize lists by category to improve the ease of locating items
10d.	Locate "Save Load List" and "Print Load List" in the "File" pull down menu
10e.	Ensure clicking on description in "selected items" does not scroll entire list right

Table 12: Load List Recommendations

3.3.11 User Evaluation Task 11: Notepad

Stakeholders were instructed to create a new notepad and add four items to the notepad. Next, they were to browse the notepad and go to the first item, then move forward through all the items in the notepad.

This feature was poorly received by many of the stakeholders (see Figure 15). The ratings for both ease of use and usefulness of the notepad feature were variable, encompassing ratings as low as "1" and as high as "5", yielding the means 2.9 and 3.5 respectively. Five users commented that the program crashed or they had to reboot their computer while running Notepad. Four stakeholders commented that this section would be more appropriately named a bookmark rather than a notepad. Six users stated that the notepad should open right away when they created it. Three users commented that it was impossible to delete an entry from the Notepad, thus entries that were made erroneously could not be removed. Another user commented that the Notepad allowed you to make duplicate entries.

In general, users complained about the lack of feedback when using the notepad. They found it difficult to determine if a notepad was open and if items had been correctly added to it.

The ratings were slightly higher for the usefulness of the Notepad, suggesting that respondents either learned how to use the feature as intended or were able to see the potential use that it may have, disregarding the ease of use issues.

Figure 15: Notepad Results

Recommendations to address these issues are provided in Table 13 below.

Recommendations	
11a.	Change name from "notepad" to "bookmark"
11b.	Open viewable screen immediately when notepad is created
11c.	Add ability to delete entries from Notepad
11d.	Provide feedback on duplicate entries

Table 13: Notepad Recommendations

3.3.12 User Evaluation Task 12: History

Users were instructed to use the History feature in the Goto menu to go to previously viewed items. Next they were to use the back and forward features to view items.

Several of the stakeholders reported difficulty in getting this feature to load and function properly, and as such only 17 of the 25 stakeholders provided ratings on the Likert scale. Those that did provide ratings tended to be neutral or somewhat agreeable, with only a few selecting "5" or choosing values less than "3" (see Figure 16). "Overall I found the History feature easy to use" received a mean response of 3.5. A mean response of 3.6 was given for "Overall I found the History feature useful". Three users suggested making the "forward" and "back" navigational features more accessible, possibly by placing them constantly on the screen.

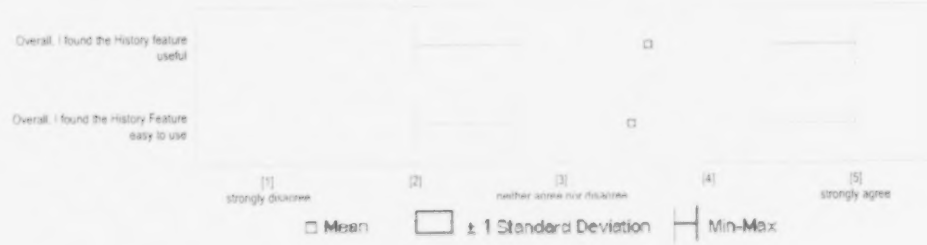

Figure 16: History Results

Recommendations to address these issues are provided in Table 14 below.

Recommendation	
12a.	Add 'back' and 'forward' buttons associated functionality to browse screen to improve accessibility

Table 14: History Recommendations

3.3.13 User Evaluation Task 13: Cut and Paste

Participants were instructed to go to an item with a text window and then copy the text and paste it into a word-processor. Next they were instructed to go to an item with a picture in a graphics window and copy and paste the picture into a word-processor.

This feature of the Soldier's Day software was well received by the stakeholders (see Figure 17).

The majority of ratings were clustered around the "4" and "5" level, yielding a mean of 4.1 for ease of use and 4.4 for usefulness of the Cut-and-Paste feature. Two users suggested that the right click of the mouse should provide the cut and paste option seen in many Windows applications.

Figure 17: Cut and Paste Results

Recommendations to address these issues are provided in Table 15 below.

Recommendation
13a. Provide right click cut and paste similar to windows applications

Table 15: Cut and Paste Recommendations

3.3.14 User Evaluation Task 14: User Manual

For this task, users were asked two series of questions about the user manual. They were asked to indicate how often they used the Soldier's Day User Manual, how often they typically use User Manuals and how often they referred to the online help. The distribution of responses to these questions is summarized in Figure 18. Next the users were asked to respond to seven Likert scale questions.

The frequency of use data for user manuals shows that trial participants used the Soldier's Day user manual less frequently than they would ordinarily use a user manual. Twenty-two respondents reported that they typically use user manuals occasionally or frequently, however only 16 claimed they used the Soldier's Day user manual occasionally or frequently. Still fewer participants made use of the online help with only 14 reporting they used it occasionally or frequently. It is possible that the participants' user manual use during the trial differed from their usual habits simply because of the fact that they were in a trial situation.

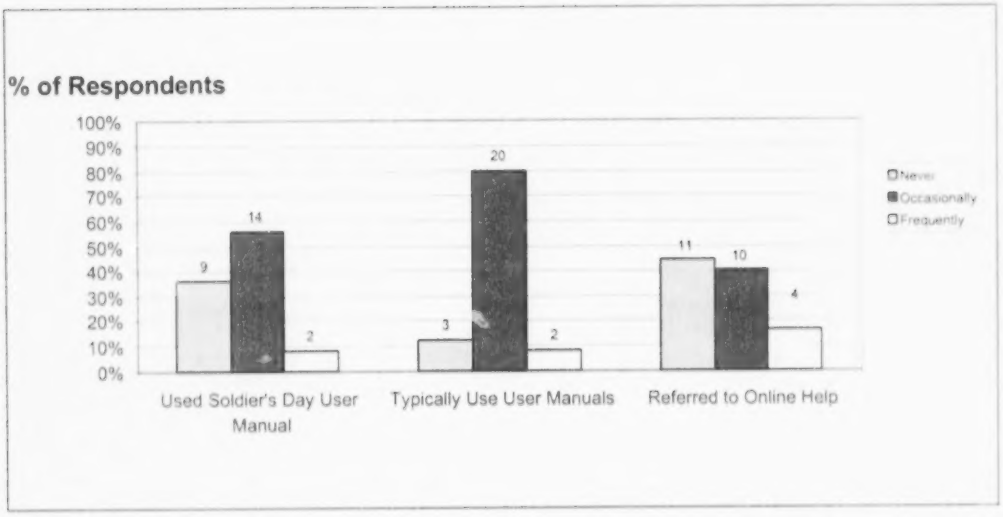

Figure 18: User Manuals (25 respondents) Usage Results

There were few comments about the user manual (see Figure 19). Many of the users who did comment said they did not use the manual or used it only once. One user commented that he preferred the online help format. Another commented that the set-up of the trial did not cater to the use of the user manual. One user stated that the manual needs to be sectioned off better. Still, the ratings on the five-point Likert scale were clustered around "4" indicating a favourable response to the manual.

One reverse scored item was, "I would have organized the information differently", with most rating this as "3", indicating a neutral view (see Figure 20). This statement was one of only two reverse scored items in the survey, which may have made the question unclear.

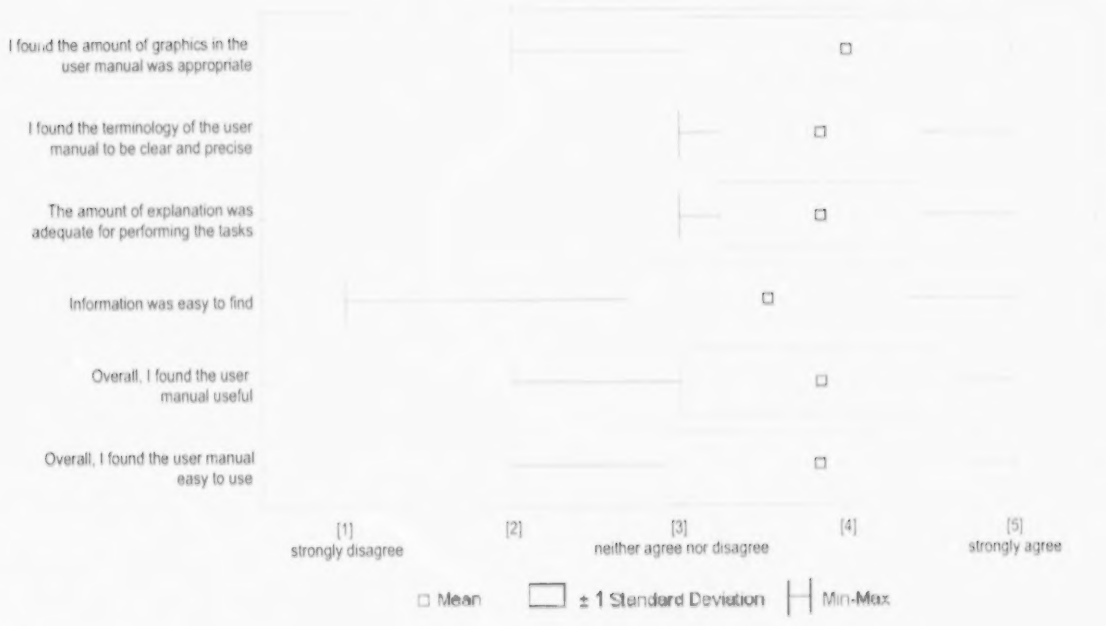
I found the amount of graphics in the user manual was appropriate
I found the terminology of the user manual to be clear and precise
The amount of explanation was adequate for performing the tasks
Information was easy to find
Overall, I found the user manual useful
Overall, I found the user manual easy to use
[1] strongly disagree
[2]
[3] neither agree nor disagree
[4]
[5] strongly agree
Mean
± 1 Standard Deviation
Min-Max

Figure 19: User Manual Results

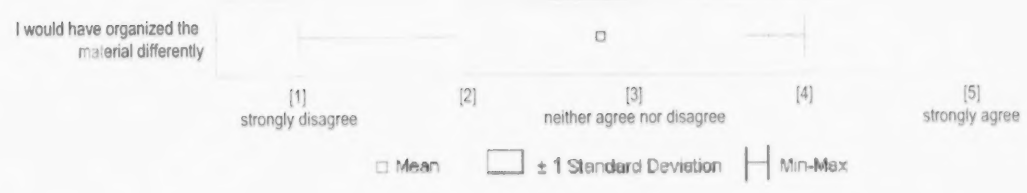

Figure 20: User Manual (reverse scored item)

Recommendations to address these issues are provided in Table 16 below.

Recommendation
14a. Divide information into sections to improve organization

Table 16: User Manual Recommendations

3.4 Utility Assessment

In this section of the questionnaire, participants responded to questions designed to assess the utility of Soldier's Day.

Open-ended feedback was elicited regarding what the most and least useful aspects of the software were and what additions stakeholders would like to see. Respondents were also invited to make general comments as to the usefulness of the program for them. A summary of the comments, for each of the open-ended questions can be found below. Additional comments elicited during focus groups are also included in the tables.

The stakeholders were also asked to rate 15 statements on the utility of Soldier's Day according to a five-point Likert scale. This data is summarized after the summaries of open-ended feedback below.

3.4.1 Open-ended Feedback

What were the *most* useful aspects of the software program?

Five stakeholders commented that the load list was the most useful aspect of Soldier's Day. Similarly, five said that the information on missions was the most useful aspect. The clothing and equipment category was listed four times as most useful, as was the organizational structure. Two researchers and one academic stakeholder said that the reference section was the most useful. This is likely because these stakeholder groups would use Soldier's Day for research purposes.

What were the *least* useful aspects of the software?

Four participants from various stakeholder categories said that the Human Factors section was the least useful aspect of Soldier's Day. The comments reflect that for those who have an interest in human factors, the information is too general. Three stakeholders said the notepad was least useful. Three also listed the Organization Structure as least useful. One Requirements Staff stakeholder and one Other Army Unit stakeholder listed the reference section as least useful. The perceived usefulness of this section appears to be divided along stakeholder lines as it was listed as most useful by some Academics and Researchers. Two users expressed concern about outdated information, and the need for a procedure to keep information current. Two users also commented that information on non-infantry soldiers would be useful.

What *additions* would you like the software to have?

The stakeholders listed a wide variety of potential additions to the software. Most of the suggestions given involved improving the existing functionality rather than adding new information. Stakeholders asked for more detail in the Mission and Tasks, Clothing and Equipment and Organizational Structure areas. Another improvement that was suggested more than once was the need for improved navigation features, such as more on-screen navigation.

Each of the participant groups had suggestions for additions to Soldier's Day to improve the Utility. Requirements staff desired the addition of trial reports and other technical information, as well as organizational charts up to Brigade level. Researchers also wanted more organizational chart information and some additional information on the nature of infantry tasks and the use of clothing and equipment. Engineering staff wanted additional technical data included for clothing and equipment. Designers/Manufacturers wanted more technical drawings. Other Army Units wanted to see Mechanized Operations represented in the database.

Please comment on the usefulness of the program to you.

Many stakeholders commented that Soldier's Day is a good reference tool, or a useful source for background information. Several suggested it would be useful as a basic introduction for people who know very little about the military, but did not provide a level of detail that was helpful to those already knowledgeable in this field. Many also said they saw the potential usefulness of Soldier's Day if some key changes were made. Three respondents felt the program was useful, but expressed concern with keeping the data current.

In general, the written comments for the Utility Assessment portion of the questionnaire were positive. Areas in which almost all stakeholders expressed satisfaction included clothing and equipment, missions and tasks, the load list, and the organization structure information.

3.4.2 Likert Scale Responses

The following graph illustrates the means determined from all questionnaire participants for each of the utility questionnaire items ranked on the five-point Likert scale.

Soldier's Day provides useful baseline information to support the development and acquisition process
Soldier's Day supports the development of Statements of Requirements
Soldier's Day supports the development of Technical Specifications
Soldier's Day assists in the planning of research protocols
Soldier's Day assists in the prioritization of research efforts
Soldier's Day is useful in developing an understanding of missions, tasks and activities
Soldier's Day is useful in developing an understanding of physical demands
Soldier's Day is useful in developing an understanding of informational needs
Soldier's Day is useful in developing an understanding of user characteristics
Soldier's Day is useful in developing an understanding of current clothing and equipment systems
Soldier's Day is useful in developing an understanding of compatibility issues
Soldier's Day provides useful information regarding Human Factors
Soldier's Day provides useful scientific references
Soldier's Day provides useful military references
Soldier's Day is useful in developing an understanding of battle dress and associated weights
[1] strongly disagree
[2]
[3] neither agree nor disagree
[4]
[5] strongly agree
Mean
± 1 Standard Deviation
Min-Max

Figure 21: Utility Assessment Questions Results

Of the 15 Likert-scale questions, seven questions had means between 4 and 5, and eight questions had means between 3 and 4. Those questions with a mean rank between 4 and 5 tended to centre around the information contained within Soldier's Day, with emphasis on how much information was present and how the information helped the user to develop an understanding of areas of interest. Specifically, the areas with means higher than 4 were:

- SD is useful in developing an understanding of missions, tasks and activities
- SD is useful in developing an understanding of battle dress and associated weights
- SD is useful in developing an understanding of current clothing and equipment systems
- SD provides useful military references
- SD is useful in developing an understanding of physical demands
- SD is useful in developing an understanding of user characteristics
- SD provides useful baseline information to support the development and acquisition process

These high rankings are further supported by the written comments. Many stakeholders made reference in their comments to the usefulness of Soldier's Day as an information overview. In addition, stakeholder groups mentioned specific areas they found to be especially beneficial. Requirements Staff, Researchers, and Engineering Staff mentioned the usefulness of the "Clothing and Equipment" and "Missions and Tasks" sections. Designers and Manufacturers, as well as Other Army Units described the "Clothing and Equipment" section as useful. The "Load List" was also specifically mentioned in the comments section by Requirements Staff, Researchers, Designers and Manufacturers, Academia, and Other Army Units.

Areas that received a mean rating between 3 and 4, indicating some, although not strong, agreement with the statements included the following:

- SD is useful in developing an understanding of compatibility issues.
- SD provides useful scientific references.
- SD provides useful information regarding Human Factors.
- SD assists in the planning of research protocols.
- SD is useful in developing an understanding of informational needs.
- SD supports the development of Statements of Requirements.
- SD supports the development of Technical Specifications.
- SD assists in the prioritization of research efforts.

One concern raised in the comments that appears to directly relate to the lower ratings in these areas, is the ability to keep the information contained within Soldier's Day current and up-to-date. This issue was raised by individuals from various stakeholder groups including Engineering Staff, Requirements Staff, and Other Army Units. As well, the software was often complimented on its expanse of general information, but feedback indicated it was often not specific enough to apply in a particular circumstance or project.

Overall, the feedback for the utility assessment portion of this questionnaire shows that Soldier's Day provides a good introductory or first resource for information when doing work in this field. It is a good tool for orienting individuals to the demands, tasks, equipment, and clothing that the land force uses. However, the information in Soldier's Day is not specific enough to drive or direct new research as a stand alone product. Programming issues, such as navigation difficulties and program crashes interfered with the usefulness of the program.

However, most stakeholders could see the potential for tools within Soldier's Day, such as the notepad, to be very useful if these mechanical issues were overcome.

3.5 Usability Assessment

In this section of the questionnaire, participants responded to questions about the general usability of the Soldier's Day interface. The collected responses aid in the determination of how easy it is to use Soldier's Day for the various stakeholders.

Just as for the utility assessment portion of the trial, in the usability assessment participants were asked both open-ended and five-point Likert scale questions.

3.5.1 Open-ended Feedback

What were the *most* easy to use features of the software?

Five stakeholders commented that the main menu or overall menu structure was easy to use. Five users found the keyword search easy to use. Other features that were listed as most easy to use include the missions and tasks category, videos, history feature. Three users commented that the ability to complete most actions using a mouse made the software easy to use.

What were the *least* easy to use features of the software?

Eight users commented that that Notepad was the least easy to use feature of Soldier's Day, indicating some major difficulty with this feature. The load list was listed six times as the least easy to use feature. Six users also commented that general navigation issues made the software difficult to use. The "associated' feature received three listings as least easy to use while keyword search received two.

What additional features would make the software easier to use?

In general the comments in this area centered on improved navigation. Five users expressed a desire for an on screen "previous screen" or "back" button. Two users commented that the software needs an uninstall feature. This has subsequently been added. Other areas mentioned included the addition of more pictures in both the software and the user manual and an improvement of the tree system to show more clearly which branches have more levels.

Please comment on the ease of use of the program for you.

Most comments for this question stated that the program was generally easy to use, but that there were a few problem areas. Three users commented that they got confused or "lost" in the interface. Three users also commented on problems with program errors or crashes that affected the ease of use.

3.5.2 Likert Scale Responses

Figure 22 illustrates the means determined from all questionnaire participants for each of the items ranked on the five-point Likert scale.

The usability assessment portion of the Soldier's Day questionnaire yielded fairly positive results. In general, the stakeholders found the system straightforward and understandable. The results did include a few lower ratings on the five-point Likert scale, and these can be attributed to a couple of key difficulties that the users encountered.

Areas that were ranked between 4 and 5 on the five-point Likert scale indicate the users were quite agreeable to those particular aspects of Soldier's Day. These areas included:

- Text was easy to read.
- It was easy to learn to use this system.
- I felt comfortable using this system.
- The information was clear.
- The structure of information trees was easy to understand.

These findings are supported by the written comments provided throughout the questionnaire. Many comments suggested that this software was easy to use, especially features such as the keyword search, videos, menus, and particular informational segments such as clothing and equipment, or missions and tasks. Some users noted that this software is similar to other Windows applications, and found that their previous experience allowed them to use Soldier's Day with greater ease and understanding.

The means for the above noted areas were clustered around the value of 4.0 on a five-point Likert scale, indicating that these areas were not overwhelmingly accepted, but were found to be somewhat acceptable to the users. This tentative acceptance may be due in part to some of the difficulties encountered with the software. These included problems with the notepad and load list features, as well as some aspects of navigation.

To isolate and understand the issues being raised in this section of the Soldier's Day assessment, the remaining areas will be divided into three sections; those rated from 3.5 to 3.9, those rated from 3.0 to 3.4, and those rated below 3.0, on the five-point Likert scale.

Ratings between 3.5 and 3.9 indicate some, although not strong, agreement with those specifically identified areas. Items with mean ratings in that range include:

- The terminology used by the system makes sense.
- The system provides users with a lot of value for their efforts.
- I liked using the interface of this system.
- The organization of information on the screen was clear.
- It was easy to find the information I needed.
- Labels and abbreviations were clear.
- It was easy to select functions and options.
- The use of color enhanced my ability to use the system.

I felt comfortable using this system
I liked using the interface of this system
It was easy to learn to use this system
It was easy to find the information I needed
The information was clear
The organisation of information on the screen was clear
It was easy to call up the screen I wanted to work on
The system provides users with a lot of value for their efforts
The system would improve the quality of my work
The system has all the functions and capabilities I expect it to have
All necessary information is available on each screen
Labels and abbreviations are clear
Text was easy to read
The structure of information trees was easy to understand
The use of colour enhanced my ability to use the system
The terminology used by the system makes sense
It was easy to select functions and options
I could always tell when additional information was available
The organisation of lists of information was clear
It was always clear how to move to associated items in the database
[1] strongly disagree
[2]
[3] neither agree nor disagree
[4]
[5] strongly agree
Mean
± 1 Standard Deviation
Min-Max

Figure 22: Usability Assessment Questions Results

The acceptable ratings given for these areas suggest that Soldier's Day was straightforward and the information was quite clear, both in content and layout. These areas likely did not receive ratings in the highly agreeable range of 4 to 5 due to navigational difficulties and the difference in organization from what the user sometimes anticipated.

The somewhat acceptable range encompasses ratings of 3.0 to 3.4, indicating a neutral to somewhat agreeable opinion of the specifically identified areas. These areas include:

- The system would improve the quality of my work.
- It was easy to call up the screen I wanted to work on.
- All necessary information is available on each screen.
- The system has all the functions and capabilities I expect it to have.
- The organization of lists of information was clear.
- I could always tell when additional information was available.

The content of the database was received favourably, however, the ratings for the above areas were slightly lower due to difficulties with navigational aspects of the software. Users identified problems determining where some information was located, and where they were located during a search. Another issue that may have lowered some of the above ratings was the level of information detailed about different topics. Some users are very knowledgeable in certain aspects contained in Soldier's Day, and the written comments suggested that these sections only provide a general overview, not an in-depth coverage of the material for those users.

One area of the Usability Assessment section received a low mean rating of 2.4 on the five-point Likert scale. This area is:

- It was always clear how to move to associated items in the database.

This is supported by the written comments that identify navigational difficulties and knowing what information is included, how to find that information, and then how to find items related to that information.

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4.0 Conclusions and Future Directions

Overall, the results of the Usability and Utility testing of the Soldier's Day program verified the intended usefulness of the database, and the user-friendly interface design. This section summarizes the main issues related to the utility and usability results. In addition, these issues are used to suggest options for future Soldier's Day developments.

4.1 Utility

There was good support for the usefulness of Soldier's Day as a tool to support planning and analysis in a range of different occupations and areas of interest. The rating of utility was reasonably high suggesting that SD provided participants with many of the things they needed to support their tasks and that these things were useful. Many stakeholders commented that Soldier's Day is useful as a basic introduction for people who know very little about the military, but could provide additional detail for those already knowledgeable in the field. Each of the participant groups had suggestions for additions to SD to improve the Utility. Requirements staff desired the addition of trial reports and other technical information, as well as organizational charts up to Brigade level. Researchers also wanted more organizational chart information and some additional information on the nature of infantry tasks and the use of clothing and equipment. Engineering staff wanted additional technical data included for clothing and equipment. Designers/ Manufacturers wanted more technical drawings. Other Army Units wanted to see Mechanized Operations represented in the database.

4.2 Usability

Participants found the software to be user friendly with a few exceptions related to the more complex forms of navigation in the system (i.e. using the associated database items). Lower acceptance of the navigational interface are not surprising since Soldier's Day was designed and built before the Internet became popular and accepted as the defacto style for navigation. Features such as the Load List, the Notepad, Human Factors Basics and the History feature were not very highly rated. Some found the Load List difficult to use, but most indicated that it was a useful feature. The Notepad was not well received due to initial difficulties with the user interface and its lack of feedback. However, participants that learned that the Notepad functioned like a bookmark feature, found it useful. Some participants indicated that the Human Factors Basics section was too general for their needs, but was sufficient as a general introduction to Human Factors principles. Several participants had difficulty activating and using the History feature, and expressed the desire have it modified to function similar to traditional windows (or web browser) "forward" and "back" navigational buttons.

4.3 Future Developments

The way ahead for Soldier's Day involves making the improvements outlined in this report. In addition, a number of issues are listed below for consideration in future developments of the Soldier's Day program.

4.3.1 Revise Software to Improve Usability

A number of specific interface suggestions were provided by a cross-section of participants and these could be incorporated into the software to improve usability. Annex E provides one overall checklist that integrates all the pending usability recommendations. This checklist is intended for future project tracking purposes. These modifications will serve to optimize the utility of the content and the usability of the software program structure.

4.3.2 Transform Database to a Web-Browser Platform

Given the recent adoption of the web-browser as a defacto and familiar navigational tool, Soldier's Day could be migrated to a web-browser platform. In addition to the ease of navigation, a web platform would provide expanded access to the information, easy distribution, and provide on-line links to relevant Human Factors and Infantry Web sites.

4.3.3 Integrate Mechanized Operations

During focus group discussions, several participants noted that the database suffered from the lack of mechanized infantry information. Many noted that the infantry were largely mechanized and that the trend was towards increasing the Land Force reliance on mechanized operations. A feasibility assessment on the time, budget and resources required to complete a module on Mounted Infantry has been conducted in support of this effort[1]. Given the desire expressed by stakeholders, the integration of mechanized operations to Soldier's Day warrants future consideration.

4.3.4 Expand Scope to Include Additional Army Branches

Modules could be expanded to include Mounted Infantry, Armoured, Engineering, and Artillery branches to provide a wider representation of Land Force Activities. In addition, stakeholders suggested that a SD module could be configured to support efforts with respect to future AFV development and acquisition activities.

4.3.5 Imbed Human Factors Tools into Soldier's Day Platform

The Soldier's Day program could provide the foundation for many of the related software tools that have been developed in support of Human Factors. Participants, for example, suggested that the Army Combat Clothing and Equipment Survey System (ACCESS) results could be integrated into the Soldier's Day platform to ensure dissemination of the results.

4.3.6 Modify Soldier's Day to Support Training

Requirements staff expressed considerable encouragement for linking Soldier's Day to training applications. A great deal of the information required for training has already been integrated into the program. In addition, the multimedia format, and the interactive design provides a framework that is conducive to adult learning. Modifications or additions necessary to migrate Soldier's Day to support training efforts should be identified.

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[1] KUMAGAI, J.K., TACK, D.W., 1998. Soldiers Day Database – Expansion to Include Mounted Rifleman – Phase 1 – Data Acquisition Requirements. DCIEM Contractor Report No. 98-CR-46, HumanSystems Inc: Guelph, Ontario. Submitted in partial fulfillment of DCIEM Contract No. W7711-6-7286/01-SRV, May 1998.

4.3.7 Establish Ownership and Management of Soldier's Day

The results of this study have demonstrated the utility and usability of a multimedia database tool to support research and development efforts within the Land Forces. While the database currently resides at DRDC Toronto, the future ownership and management of the tool requires consideration. As part of the ownership, the database will require a strategy for on-going verification of the accuracy and currency of the content.

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Annex A:

User Evaluation Package

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A *Soldier's Day* Database (Beta Version 2.0) **User Evaluation**

WELCOME!

Thank you for taking part in this evaluation of the Soldiers Day. The purpose of this evaluation is to determine how easy it is to use the Soldiers Day multimedia database program, and how useful it is for learning about the dismounted infantry role. The feedback obtained from this trial will allow system designers and developers to get a better appreciation of your needs. This contributes to the development of a product that meets user requirements and is effective for all stakeholders.

In this mail-out package, you have been given a Soldiers Day CD-ROM, User's Manual, DCIEM Fact Sheet, Evaluation Package, and a return envelope. You will be performing some typical tasks (e.g. installation, searching for information, etc.) with the Soldiers Day program. Do your best, but don't be all that concerned with results. This evaluation, and the associated tasks, is designed to sequentially expose you to all areas and features of Soldiers Day. We would hope that you would extend this discovery of Soldiers Day on your own to better understand how Soldiers Day might be useful in your specific areas of interest.

You will be asked to perform tasks and then provide comments or answers to questions. It is important that you answer truthfully so that we may discover both the good and bad points of this product from your perspective. Do not answer questions based on what you think we may want to hear; we need to know exactly what you think.

You may call me for assistance or to ask questions (519-836-5911). However, this is a study of the product and its written and on-line support materials, and we need to see how they work with a person such as yourself working independently. Please be sure to attempt to resolve any difficulties you have, and note them in your evaluation.

When you have completed the evaluation, please enclose the completed evaluation into the return envelope provided and mail it back to us. Please mail the evaluation by **Wednesday, March 3, 1999**. All your individual responses will remain confidential. Only group data will be reported.

Thank you again.

Jillian Kumagai

(519) 836-5911

Please complete the following details before going further.

Name: _____

Previous Exposure:

Prior to this trial, describe your experience with Soldier's Day.

- ☐ I have had no prior exposure to Soldiers Day.
- ☐ I have viewed a demonstration of Soldiers Day.
- ☐ I have used Soldiers Day.

Computer Experience:

Indicate how often you typically use the following systems.

	Never	*Occasionally*	*Frequently*
Desktop Personal Computers	☐	☐	☐
Mac/Apple Products	☐	☐	☐
World Wide Web (Internet) Browsers	☐	☐	☐
Spreadsheet Programs	☐	☐	☐
Word Processor Programs	☐	☐	☐

A *Soldier's Day* Database (Beta Version 2.0) **User Evaluation**

Please work through the following exercises as best you can. You do not need to write down your answers to the exercises. Indicate your agreement with the questionnaire statements and provide comments if applicable. Use the online help and/or user manual to assist you with the exercises.

1. Installation

Install Soldiers Day on your computer.

Installation	*Strongly Disagree*	*Neither Agree nor Disagree*	*Strongly Agree*
I found it easy to install Soldiers Day	☐	☐	☐

Please comment on any difficulties encountered during installation: _____

_____

_____

_____

_____

2. Startup

Start the Soldiers Day program.

Startup	*Strongly Disagree*	*Neither Agree nor Disagree*	*Strongly Agree*
I found it easy to start Soldiers Day	☐	☐	☐

Please comment on any difficulties encountered during startup: _____

_____

_____

_____

_____

_____

3. Online Help

Find the contents of the online help. Find information to answer the following questions (you do not need to write down your answers):

a. What are the contents of the online help?

b. How can you use the mouse buttons to get help on a specific feature?

c. When was the Soldiers Day database last updated?

Online Help	Strongly Disagree		Neither Agree nor Disagree		Strongly Agree
I found the amount of graphics in the online help was appropriate	☐	☐	☐	☐	☐
I found the terminology of the online help to be clear and precise	☐	☐	☐	☐	☐
Information was easy to find	☐	☐	☐	☐	☐
I would have organized the material differently	☐	☐	☐	☐	☐
Overall, I found the online help useful	☐	☐	☐	☐	☐
Overall, I found the online help easy to use	☐	☐	☐	☐	☐

Please comment on any difficulties encountered with the online help: _____

4. Browsing: Clothing and Equipment

Browse through the Clothing and Equipment category to answer the following questions:

a. Find information on the "Body Armour, Fragmentation Vest." What is the "concept of use"?

b. What Human Factors Performance Requirements are given regarding "Range of Motion"?

c. Listen to the Soldier's Comments. What clothing and equipment may conflict with the Fragmentation Vest?

d. Use the "Associated" buttons to find a reference document associated with the Fragmentation Vest.

e. Find information on "Webbing, 1982 Pattern." What is the frequency of use of the Webbing?

Clothing and Equipment	Strongly Disagree		Neither Agree nor Disagree		Strongly Agree
The list of clothing and equipment items is comprehensive	☐	☐	☐	☐	☐
The amount of information for each item was sufficient for my needs	☐	☐	☐	☐	☐
Overall, I found the Clothing and Equipment information useful	☐	☐	☐	☐	☐
Overall, I found the Clothing and Equipment category easy to use	☐	☐	☐	☐	☐

Please comment on any difficulties encountered when browsing Clothing and Equipment: _____

5. **Browsing: Soldiers and Organizational Structure**

Browse through the Soldiers and Organizational Structure category to answer the following questions:

a. How many Light Automatic Riflemen are there in a Rifle Section?

b. What are the responsibilities of the Rifleman?

c. Look at the Demographics for Education Level. What proportion of riflemen have a grade 11 education?

d. Use the "Associated" buttons to find a task associated with the Rifleman (e.g. Bayonet Fighting)

Soldiers and Organizational Structure	*Strongly Disagree*		*Neither Agree nor Disagree*		*Strongly Agree*
Information about the infantry organizational structure was sufficient for my needs	☐	☐	☐	☐	☐
Information about the dismounted rifleman was sufficient for my needs	☐	☐	☐	☐	☐
Overall, I found the Soldiers and Organizational Structure information useful	☐	☐	☐	☐	☐
Overall, I found the Soldiers and Organizational Structure module easy to use	☐	☐	☐	☐	☐

Please comment on any difficulties encountered when browsing Soldiers and Organizational Structure. _____

_____

_____

_____

_____

6. **Browsing: Missions and Tasks**

Browse through the Missions and Tasks category to answer the following questions:

a. In Conventional Warfare, find the offensive operation of Section Attack and make it the current item. What are the types and means of attack?

b. View the Video "Section Attack". What are the seven Sub-Tasks?

c. Find C7 Rifle Firing in the Associated Items Window. In the prone position, what is the body angle to the line of fire?

d. Use the "Associated" buttons to find equipment associated with the C7 Rifle Firing?

e. From the Main Menu, use the Tree View to locate "Mark Firing" in "NBC Operations"

f. From the Mission Scenarios Menu, view some of the "Patrol" Mission Scenario

g. From the Mission Scenarios Menu, view some of the "Patrol" Task Flows

Missions and Tasks	*Strongly Disagree*		*Neither Agree nor Disagree*		*Strongly Agree*
The information in the Mission and Tasks category was comprehensive	☐	☐	☐	☐	☐
The amount of information for each item was sufficient for my needs	☐	☐	☐	☐	☐
The information in the Mission Scenarios was sufficient for my needs	☐	☐	☐	☐	☐
The information in the Task Flows was sufficient for my needs	☐	☐	☐	☐	☐
Overall, I found the Missions and Tasks information useful	☐	☐	☐	☐	☐
Overall, I found the Missions and Tasks category easy to use	☐	☐	☐	☐	☐

Please comment on any difficulties encountered when browsing Missions and Tasks. _____

_____

_____

_____

_____

_____

7. References

Use the Reference Search to identify and view references on the following topics:

a. Helmet

b. Night Vision Goggles

If you are connected to a printer, print one of the references.

References	Strongly Disagree		Neither Agree nor Disagree		Strongly Agree
I found the types of references useful.	☐	☐	☐	☐	☐
Overall, I found the Reference Search useful.	☐	☐	☐	☐	☐
Overall, I found the Reference Search easy to use.	☐	☐	☐	☐	☐

Please comment on any difficulties encountered with the Reference Search. _____

_____

_____

_____

_____

_____

8. Human Factors Basics

Use the Human Factors Basics category to answer the following questions:

a. What is the definition of Human Factors?

b. What is one of the basic models of Human Factors?

c. What criteria should a Human Factors Test Plan meet?

Human Factors Basics	Strongly Disagree		Neither Agree nor Disagree		Strongly Agree
The contents of the Human Factors Basics is comprehensive.	☐	☐	☐	☐	☐
The amount of information for each item was sufficient for my needs.	☐	☐	☐	☐	☐
Overall, I found the Human Factors Basics useful.	☐	☐	☐	☐	☐
Overall, I found the Human Factors Basics easy to use.	☐	☐	☐	☐	☐

Please comment on any difficulties encountered with the Human Factors Basics _____

_____

_____

_____

_____

_____

9. Keyword Search

Use the Keyword Search to identify and view information anywhere in the database on the following topics:

a. Attack

b. Cold Weather

c. Gloves

Keyword Search	Strongly Disagree		Neither Agree nor Disagree		Strongly Agree
Overall, I found the Keyword Search useful	☐	☐	☐	☐	☐
Overall, I found the Keyword Search easy to use	☐	☐	☐	☐	☐

Please comment on any difficulties encountered with the Keyword Search _____

_____

_____

_____

_____

_____

10. Load List

From the Clothing and Equipment Menu, open the Load List and answer the following questions.

a. Generate the list of items that would be selected for a Rifleman in Fighting Order in a Temperate Climate. How many HC Smoke grenades are typically carried?

b. Select the target weight for a 50th percentile Male. Does the Actual Weight of the Load List exceed the Target weight for a 60th percentile Male?

c. Starting with an empty Load List, make a new Load List that consists of the following items:

- 1 – Rifle, C7A1, with optical sight
- 1 – 20 Rounds Tracer
- 2 – C7 Mag, metal, 26 rds
- 1 – Pack of Smokes' (0.03 kg). [Add this as a Customized Item]

Save the list as "test1". View and Print (if connected to a printer) a report of the Load List.

Load List	Strongly Disagree		Neither Agree nor Disagree		Strongly Agree
Overall, I found the Load List useful	☐	☐	☐	☐	☐
Overall, I found the Load List easy to use	☐	☐	☐	☐	☐

Please comment on any difficulties encountered with the Load List: _____

_____

_____

_____

_____

_____

11. Notepad

a. Make a New Notepad titled "test2." Go to the following items and add them to the Notepad.

- 1 – C9 Light Machine Gun (5.56 mm): *Characteristics of the C9 LMG*
- 2 – C9 Light Machine Gun (5.56 mm): *C9 Firing (Auto)*
- 3 – Light Automatic Rifleman: *Org / Weapons / Ammo / Equ.*
- 4 – Peacekeeping Tasks and Activities: *Training*

b. Browse the Notepad and go to the first item. Move forward through all the items in the Notepad.

Notepad	Strongly Disagree		Neither Agree nor Disagree		Strongly Agree
Overall, I found the Notepad useful	☐	☐	☐	☐	☐
Overall, I found the Notepad easy to use	☐	☐	☐	☐	☐

Please comment on any difficulties encountered with the Notepad: _____

_____

_____

_____

_____

_____

7 of 11

12. History

a. From the Goto pulldown menu, use the History feature to go to previously viewed items.

b. Use the back and forward features to view items.

History	*Strongly Disagree*		*Neither Agree nor Disagree*		*Strongly Agree*
Overall, I found the History feature useful	☐	☐	☐	☐	☐
Overall, I found the History feature easy to use	☐	☐	☐	☐	☐

Please comment on any difficulties encountered with the History feature: _____

_____

_____

_____

_____

_____

13. Cut and Paste

a. Go to an item that has a text window. Copy the text and paste the text into a word-processor.

b. Go to an item that has a graphics window with a picture. Copy the picture and paste the picture into a word-processor.

Notepad	*Strongly Disagree*		*Neither Agree nor Disagree*		*Strongly Agree*
Overall, I found the Cut-and-Paste feature useful	☐	☐	☐	☐	☐
Overall, I found the Cut-and-Paste feature easy to use	☐	☐	☐	☐	☐

Please comment on any difficulties encountered with the Cut-and-Paste feature: _____

_____

_____

_____

_____

_____

14. User Manual

a. Indicate how often you used the Soldiers Day User Manual.

Never Occasionally Frequently

b. Indicate how often you typically use User Manuals.

Never Occasionally Frequently

c. Indicate how often you referred to the on-line help.

Never Occasionally Frequently

User Manual	*Strongly Disagree*		*Neither Agree nor Disagree*		*Strongly Agree*
I found the amount of graphics in the user manual was appropriate					
I found the terminology of the user manual to be clear and precise					
The amount of explanation was adequate for performing the tasks					
Information was easy to find					
I would have organized the material differently					
Overall, I found the user manual useful					
Overall, I found the user manual easy to use					

Annex B:

Utility Assessment Questionnaire

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Utility Assessment

Below are questions about different aspects of the Soldier's Day content.

Your responses to these questions will help to determine how well Soldier's Day supports your needs.

Mark boxes like this ■. You do not need to fill the box completely.

Choose the centre box only if you really have no opinion one way or the other.

If you have no experience for an item, leave it blank.

For each statement:

Strongly Agree if you find that this statement exactly describes your feelings.

Strongly Disagree if you find that this statement is the complete opposite of your feelings.

Overall Utility	*Strongly Disagree*		*Neither Agree nor Disagree*		*Strongly Agree*
Soldier's Day provides useful baseline information to support the development and acquisition process.	☐	☐	☐	☐	☐
Soldier's Day supports the development of Statements of Requirements.	☐	☐	☐	☐	☐
Soldier's Day supports the development of Technical Specifications.	☐	☐	☐	☐	☐
Soldier's Day assists in the planning of research protocols.	☐	☐	☐	☐	☐
Soldier's Day assists in the prioritization of research efforts.	☐	☐	☐	☐	☐
Soldier's Day is useful in developing an understanding of missions, tasks and activities.	☐	☐	☐	☐	☐
Soldier's Day is useful in developing an understanding of physical demands.	☐	☐	☐	☐	☐
Soldier's Day is useful in developing an understanding of informational needs.	☐	☐	☐	☐	☐
Soldier's Day is useful in developing an understanding of user characteristics.	☐	☐	☐	☐	☐
Soldier's Day is useful in developing an understanding of current clothing and equipment systems.	☐	☐	☐	☐	☐
Soldier's Day is useful in developing an understanding of compatibility issues.	☐	☐	☐	☐	☐
Soldier's Day provides useful information regarding Human Factors.	☐	☐	☐	☐	☐
Soldier's Day provides useful scientific references.	☐	☐	☐	☐	☐
Soldier's Day provides useful military references.	☐	☐	☐	☐	☐
Soldier's Day is useful in developing an understanding of battle dress and associated weights.	☐	☐	☐	☐	☐

A *Soldier's Day* Database (Beta Version 2.0) **Utility Assessment**

The following questions assess the software in terms of how *useful* it would be for you.

What were the most useful aspects of the software program? (*Aspects* refers to categories of information, features, etc.)

1. _____
2. _____
3. _____

What were the least useful aspects of the software?

1. _____
2. _____
3. _____

What additions would you like the software to have?

1. _____
2. _____
3. _____

Please comment on the usefulness of the program to you.

_____

Annex C:

Usability Assessment Questionnaire

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Usability Assessment

Below are questions about the general usability of the Soldier's Day interface.

Your responses to these questions will help us determine how easy Soldier's Day is to use.

Mark boxes like this ■. You do not need to fill the box completely.

Choose the centre box only if you really have no opinion one way or the other.

If you have no experience on an item, leave it blank.

For each statement:

Strongly Agree if you find that this statement exactly describes your feelings.
Strongly Disagree if you find that this statement is the opposite of your feelings.

Overall Usability	*Strongly Disagree*		*Neither Agree nor Disagree*		*Strongly Agree*
I felt comfortable using this system.	☐	☐	☐	☐	☐
I liked using the interface of this system.	☐	☐	☐	☐	☐
It was easy to learn to use this system.	☐	☐	☐	☐	☐
It was easy to find the information I needed.	☐	☐	☐	☐	☐
The information was clear.	☐	☐	☐	☐	☐
The organisation of information on the screen was clear.	☐	☐	☐	☐	☐
It was easy to call up the screen I wanted to work on.	☐	☐	☐	☐	☐
The system provides users with a lot of value for their efforts.	☐	☐	☐	☐	☐
The system would improve the quality of my work.	☐	☐	☐	☐	☐
The system has all the functions and capabilities I expect it to have.	☐	☐	☐	☐	☐
All necessary information is available on each screen.	☐	☐	☐	☐	☐
Labels and abbreviations are clear.	☐	☐	☐	☐	☐
Text was easy to read.	☐	☐	☐	☐	☐
The structure of information trees was easy to understand.	☐	☐	☐	☐	☐
The use of colour enhanced my ability to use the system.	☐	☐	☐	☐	☐
The terminology used by the system makes sense.	☐	☐	☐	☐	☐
It was easy to select functions and options.	☐	☐	☐	☐	☐
I could always tell when additional information was available.	☐	☐	☐	☐	☐
The organisation of lists of information was clear.	☐	☐	☐	☐	☐
It was always clear how to move to associated items in the database.	☐	☐	☐	☐	☐

What were the most easy to use features of the software?

1. _____
2. _____
3. _____

What were the least easy to use features of the software?

1. _____
2. _____
3. _____

What additional features would make the software easier to use?

1. _____
2. _____
3. _____

Please comment on the ease of use of the program for you.

_____

Annex D:

Additional Comments Questionnaire

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Use this space for any further comments you may have.

Thank-you for completing this questionnaire.

Please insert you responses in the stamped envelope provided. Seal and mail the envelope by March 3, 1999. All responses should be returned to:

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Guelph, Ontario
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Fax: (519) 836 1722
http://www.humansys.com

Annex E:

Recommendations

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Recommendations		✓
1a.	Write installation instructions for Windows 98/NT	
1b.	Add warning to exit all other applications before setup begins	
1c.	Add auto-run "pop-up" installation window when CD is first inserted into CD ROM drive	
3a.	Ensure help files work in Windows 98/NT applications	
3b.	Rearrange help into subcategories to improve organization	
4a.	Implement maintenance system for keeping data current, detailed and accurate	
4b.	Add "back" button to improve ease of navigation	
4c.	Present items both alphabetically and categorically	
4d.	Minimize descriptor truncations in items and data window (or add left-to-right scroll bar)	
4e.	Add a body armour category	
4f.	Add ability to click on small index pictures to move to information related to the item	
5a.	Fix "artic" spelling error (arctic)	
5b.	Clarify methods of making an associated item the current item	
5c.	Clarify meaning of "up and down" and "side-to-side" arrow icons (instruction or interface design)	
5d.	Provide additional information comparing demographics to CF average	
5e.	Provide additional information on cbt supp coy, specialty platoons, section vehicles, duties or secondary tasks of rifleman, etc.	
6a.	Provide on-screen navigation features in PowerPoint slide presentation	
6b.	Add program functionality to allow a double-click from tree view (instead of selecting and then clicking "go to")	
6c.	Link "C7 rifle firing" under weapons as well as under tasks.	
6d.	Add information on mechanized ops.	
7a.	Add program functionality to allow a double-click on a word in the keyword index to go to a reference	
7b.	Ensure return button returns to previous page, not main menu	
7c.	Scroll keywords index window when scroll bar button is dragged up and down	
7d.	Add reference numbers to all references	
7e.	Enable selection of multiple references for printing	

7f.	Enable print in landscape or portrait layout	
8a.	Ensure figures and graphics are not cropped	
9a.	Ensure search results match count provided	
9b.	Add functionality that highlights where keyword is found in text of returned search items	
10a.	Clarify procedure for customized load list (instruction or interface design). Suggested changes include "Tab" to move to next item and "Back Arrow" to remove item.	
10b.	Add search or "type first letter" indexing feature to make it easier to find specific items in load list	
10c.	Organize lists by category to improve the ease of locating items	
10d.	Locate "Save Load List" and "Print Load List" in the "File" pull down menu	
10e.	Ensure clicking on description in "selected items" does not scroll entire list right	
11a.	Change name from "notepad" to "bookmark"	
11b.	Open viewable screen immediately when notepad is created	
11c.	Add ability to delete entries from Notepad	
11d.	Provide feedback on duplicate entries	
12a.	Add 'back' and 'forward' buttons associated functionality to browse screen to improve accessibility	
13a.	Provide right click cut and paste similar to windows applications	
14a.	Section information to improve organization	

DOCUMENT CONTROL DATA SHEET

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14. ABSTRACT

(U) Soldier's Day (SD) provides a compendium of dismounted soldier's information including descriptions of clothing and equipment, roles and tasks performed, organizational structure, soldier characteristics, and human factors guidelines and references. The aim of this trial was to investigate the usability and utility of the SD Multimedia database with representative stakeholders. Twenty-five users from the six stakeholder groups (Requirements Staff, Researchers, Engineering Staff, Designers and Manufacturers, Academia and Other Army Units) completed the assessment of SD. For the purposes of this trial, a number of modifications were made to include the development and addition of a Battle Dress model, mission operation scenarios and task flows, and updated reference materials and manuals. Both a group session and mail-outs were used to administer the usability / utility evaluations. There was good support for the usefulness of SD as a tool to support planning and analysis in a range of different occupations and areas of interest. The rating of utility was reasonably high suggesting that SD provided participants with many of the things they needed to support their tasks and that these things were useful. Participants found the software to be user friendly with a few exceptions related to the more complex forms of navigation in the system. Features such as the Load List, the Notepad, Human Factors Basics and the History feature were not very highly rated, but a majority of users agreed that the features were user-friendly. Recommendations to improve the usability are detailed in the report. Future development opportunities are also detailed in the report.

(U) La base de données de la journée du soldat (JS) constitue un recueil de renseignements sur les soldats débarqués. L'on y trouve des informations sur leurs vêtements et leur équipement, sur les rôles et les tâches qu'ils exécutent, sur leur structure organisationnelle et sur les caractéristiques du soldat ainsi que des directives et des références concernant les facteurs humains. Cet essai a pour objet d'évaluer, en collaboration avec des représentants des intervenants, la convivialité et l'utilité de la base de données multimédia de la JS. Vingt?cinq utilisateurs venant des six groupes d'intervenants (le personnel des besoins, les chercheurs, le personnel du génie, les concepteurs et les fabricants, le monde universitaire et autres unités de l'Armée de terre) ont évalué la base JS. Pour les fins du présent essai, un certain nombre de modifications ont été apportées de façon à inclure l'élaboration et l'ajout d'un modèle de tenue de combat, de scénarios concernant le déroulement de missions, de diagrammes des tâches ainsi que des documents et manuels de référence mis à jour. Les évaluations de la convivialité/l'utilité ont été administrées dans le cadre de séances de groupe et également à l'aide d'envois postaux. L'utilité de la JS en tant qu'outil servant à appuyer la planification et l'analyse dans toutes sortes d'occupations et de zones d'intérêt a bénéficié d'un bon appui. Les résultats de l'évaluation de l'utilité étaient raisonnablement bons, ce qui laisse supposer que la JS a offert aux participants de nombreux outils dont ils avaient besoin pour exécuter leurs tâches et que ces outils étaient utiles. Les participants ont trouvé le logiciel convivial à part quelques exceptions qui se rapportent à des procédures de navigation plus complexes. Des fonctions comme Charger les listes, Notepad, Principes des facteurs humains et Historique n'ont pas obtenu de bonnes notes, mais la plupart des utilisateurs ont convenu qu'elles étaient conviviales. Des recommandations voulant qu'on améliore la convivialité sont décrites en détail dans le présent rapport. Y figurent également des possibilités d'élaboration futures.

15. KEYWORDS, DESCRIPTORS or IDENTIFIERS

(U) usability; utility; soldeier's day; database; infantry; tasks; charactersitics; human factors